

WHAT IS CLAIMED IS:

1. An electroplating apparatus, comprising:
a first chamber containing a liquid;
a generator that generates sonic waves; and
a plated body disposed in liquid, wherein the sonic waves impinge on the plated body.
2. The electroplating apparatus of claim 1, further comprising a power source, wherein the plated body is coupled to a first terminal of the power source, wherein the liquid is an electrically conductive liquid, and wherein a plating layer forms on the plated body according to operation of the power source.
3. The electroplating apparatus of claim 2, further comprising a plating body disposed in the liquid, wherein the plating body is coupled to a second terminal of the power source, and wherein a distance between deposited grains in the plating layer is decreased to increase at least one of density and uniformity of grain size.
4. The electroplating apparatus of claim 3, wherein the liquid is an electrolytic solution containing metal ions, wherein the power source has a positive terminal, a negative terminal, and a switch; and wherein the plating body is metal that provides ions the same as are dissolved in the electrolytic solution.

5. The electroplating apparatus of claim 1, wherein the sonic waves impinge on the plated body in the liquid, wherein the sonic waves generate bubbles on and adjacent to the plated body surface, and wherein the sonic waves cause a repeated expansion and contraction of the bubbles.

6. The electroplating apparatus of claim 1, wherein the sonic waves are generated and propagated having a frequency of approximately 20 KHz to 60KHz.

7. The electroplating apparatus of claim 1, further comprising a second chamber containing a medium that propagates the sonic waves, wherein the generator is in the second chamber.

8. The apparatus of claim 1, wherein the liquid is an electrolytic solution containing a mixed acid-cationic solution of about 100g/l $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ and about 50g/l H_2SO_4 at an internal temperature of about 30° C; wherein sonic waves are generated and propagated at approximately 45KHz; to produce minute bubbles on and adjacent to the plated body surface; and wherein the minute bubbles have a pressure of approximately 100KPa and a temperature of approximately 1000 to 3000K.

9. An electroplating device, comprising:
- a wave generator that generates waves;
 - a chamber holding an electrolytic solution having metal ions;
 - a power source;
 - a plated body coupled to a first terminal of the power source, wherein the plated body is immersed in the electrolyte solution; and
 - a metal bar coupled to a second terminal of the power source, wherein the waves impinge on a surface of the plated body, and wherein the power source applies positive and negative charges to the first and second terminals, respectively.

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